

Eglė Gerulaitienė, Natalija Mažeikienė. Promoting Students' Self-Regulatory Learning Skills in Online Intercultural Learning

## PROMOTING STUDENTS' SELF-REGULATORY LEARNING SKILLS IN ONLINE INTERCULTURAL LEARNING

Eglė Gerulaitienė

Siauliai University, Lithuania

Natalija Mažeikienė

Vytautas Magnus University, Lithuania

**Abstract.** *The rapid growth of online distance education has implied the need to rethink delivery structures and pedagogical practices that were once appropriate (Beldarrain, 2006). Learning and teaching in a distance learning environment is a learning method that promotes interactivity, independence, and cooperation, creates favourable conditions for the students to work independently, improves accessibility of the studies, allows successfully handling work and studies and the same time, and ensures flexibility of the studies. Self-regulation is essential to the learning process. It can help students create better learning habits and strengthen their study skills, apply learning strategies to enhance academic outcomes, monitor their performance, and evaluate their academic progress (Zumbrunn et al., 2011). For students to be successful in an online course, it is necessary to work on pedagogical instruments and scenarios. The aim of the research presented in this article is to discuss the influence of online learning and pedagogical instruments and scenarios for promoting students' self-regulatory learning skills.*

**Keywords:** *online learning, intercultural learning, intercultural education, pedagogical scenario, self-regulatory learning, self-regulatory learning skills, intercultural competence.*

### Introduction

Online learning, the use of electronic media, and information technologies provide new opportunities for flexible course delivery: the emphasis on asynchronicity in online learning increases the scope for flexibility in the study process, meets a growing demand for part-time study, continuous professional development and lifelong learning. Researchers emphasize such factors as appropriate course design, technology, and environment, as well as personal traits of the students who tend to learn and are successful in online courses. Our article focuses on a virtual course, in which all or the majority of aspects of the course are delivered online: the course guide, electronic discussions, student support, and submission of assignments. Recently, distance education has moved to a more constructivist understanding of the teaching-learning process, where students are expected to actively construct knowledge for themselves by interacting with the instructor and the material to be learned. In this model, the instructor serves as a facilitator of the teaching-learning process, rather than the primary transmitter of knowledge (Sherry, 1996). Online courses have increasingly been adopting the constructivist approach, thus requiring a higher degree of interactivity between teacher and student. For students to be successful

in an online course, it is necessary to work on pedagogical instruments and scenarios. They have big influence on students' self-regulation and motivation in the learning process. Self-regulation is essential to the learning process (Jarvela & Jarvenoja, 2011; Zimmerman, 2008). It can help students create better learning habits and strengthen their study skills, apply learning strategies to enhance academic outcomes, monitor their performance, and evaluate their academic progress (Zumbrunn et al., 2011).

**The aim of the research** presented in this article is to discuss the influence of online learning and pedagogical instruments and scenarios for development of students' self-regulatory learning skills. In order to achieve the aim of the research, the quantitative research has been chosen. The research consists of two parts: 1) the first stage has involved quantitative research within the framework of the ARIADNE<sup>7</sup> project, which has provided the possibility to assess the effectiveness of educational activities for development of the Master's degree students' personal traits necessary in order to use the developed distance learning courses, and the educational effect of such activities on the expression of personal traits. Integration of educational activities into the process of Master's studies has been aimed at encouraging students' personal improvement and development of personal traits. 307 Master's degree students at two Lithuanian universities took part in the research: 20 – Klaipeda University (KU), the rest – Siauliai University (SU) students studying under Master's degree programmes of educational sciences, economics and management. Student survey was conducted using a structured questionnaire. The questionnaire was comprised of 7 diagnostic sections (linguistic skills and knowledge, research skills and knowledge, career and time management skills and knowledge, information literacy and computer skills, social interaction/communication skills, intercultural competence and personal traits) and 46 diagnostic variables. 2) The second stage – quantitative research, using questionnaires developed within the framework of the MASTER project – has provided possibilities to evaluate the assessment methods and strategies developed in the online course “Intercultural Communication and Research” (IC&R) in Moodle and aimed at the *learning to learn* strategy, allowing the Master's degree students to monitor, identify and evaluate own progress in the study process. Participants of the both stages were the same Master's degree students that attended the same course in IC&R. At the second stage of the research, 174 Master's degree students were required to fill out a questionnaire,<sup>8</sup> comprised of 31 statement on validity, reliability, transparency of assessment strategies used in the IC&R course.

---

<sup>7</sup>The questionnaire was developed during participation in the EU-funded project “Development of competences of international research collaboration in Master's degree programmes(ARIADNE)” (No. ESF/2004/2.5.0-03-415/BPD-185).

<sup>8</sup> The questionnaire was developed within the framework of the international Socrates / Minerva project “M.A.S.T.E.R. – Mobility, Assessment, Selection, Technology and E-learning Research” (No. 229580-CP-1-2006-1-NL-Minerva-M, 2006–2008).

## **Features of online learning and importance of students' self-regulated learning**

Use of online learning implies application of new pedagogic and didactic models (shifting from face-to-face to virtual teaching). As a result, the role of such learning models as problem-based learning, project-based learning is becoming more important. Four additional criteria must be taken into account when considering online courses. The word "online" implies the Internet. Students are no longer tied to the learning time and space, and have the possibility to communicate and work in a team regardless of their geographic locations. Unlimited accessibility of the Internet also creates the necessity to develop the guidelines or method that would empower the students to learn at the time most suitable for them (The success of online students, however, has been primarily investigated in terms of student ease with computer technology or satisfaction with the program rather than intrinsic characteristics such as self-directedness, self-motivation, emotional self-regulation, or persistence. Moreover, emotional characteristics that have been linked to online success include persistent effort, internal locus of control, and self-efficacy (Holcomb, King, & Brown, 2004; Wang & Newlin, 2000). Self-regulated learning (SRL) is a process that assists students in managing their thoughts, behaviours, and emotions in order to successfully navigate their learning experiences. This process occurs when a student's purposeful actions and processes are directed towards the acquisition of information or skills. Generally, models of SRL are separated into three phases: forethought and planning, performance monitoring, and reflections on performance (Zimmerman, 2008; Zumbrunn et al., 2011).

Communication/interaction is one of the most influential components not only in online studies, but also in other educational methods, as communication and interaction stimulate students' motivation to learn (Schellens & Valcke, 2005; Vrasidas & Zembylas, 2003). Interaction and communication become even less feasible and more difficult to ensure in a fully virtual educational process that completely abandons face-to-face meetings (Bromme, Hesse, & Spada, 2005). Such important components of communication as context, body language, intonation become even harder to implement in the online method (Jonassen & Kwon, 2001). Whereas interaction is very important in maintaining learners' motivation, an instructor working in a Virtual Learning Environment is required to be active and encourage students (Bryant, Khale, & Schafer, 2005; Schellens & Valcke, 2005). Successful students need to be able to monitor their own learning and progress, peer support, exercise good time management skills, and draw on experience to find resources on the Internet. Online success is further predicted by several self-regulatory functions including effective self-management, emotional self-regulation, self-generated motivation, self-efficacy, persistence, and internal locus of control (Wang & Newlin, 2000). Factors that reduce online success include student's educational background (experiences,

majors, interests, motivations, lack of prior knowledge and skills) (Wang & Newlin, 2000), and lack of written communication and/or time management skills in combination with unrealistic online course expectations (Timmons, 2004).

Studies show that online learning and virtual communication may determine higher students' dropout rates, linked to the lack of motivation. Motivation may be improved by several factors: clear instructions, uninterrupted teacher-student, student-student communication, and reduction of isolation in general. Another way to improve motivation is to delegate the student with more responsibility in learning process planning and allocation. This approach is referred to as Guided Independent Learning, fostered by active learning environment, where a student is the explorer responsible for the learning process, while the teacher is responsible for supervision and support. One of the studies on student characteristics for online learning success (Kerr et. al, 2006) has emphasized three important aspects of online learning: reading and writing proficiency, independent learning and motivation and computer literacy. Useful results have been found during the analysis of independent learning, which consists of items that assess one's ability to manage time, balance multiple tasks, set goals, and one's disposition regarding self-discipline, self-motivation, and personal responsibility. The current investigation has found that independent learning is positively associated with self-esteem and Internet self- efficacy, and that students with high independent learning scores have significantly higher course grades than low independent learners.

Prompt feedback encourages interaction/communication during online courses. The variety of assessment instruments that may be provided in an online course empowers students to test and assess own knowledge and receive prompt and individualized feedback that contributes to the learning process. Feedback is important to promote students' use of metacognitive strategies in their learning tasks (Schwartz et al., 2007). Cognitive science researchers have established that metacognition and self-regulation are important components in developing effective learners in the classroom and beyond (Zimmerman, 2001). According to the authors, there is nothing more humiliating and demotivating in an online course that absence or disregard of the feedback to the efforts (Schellens & Valcke, 2005). Development of an assessment procedure is not an easy task, as it requires considering the pedagogical principles and objectives of the tasks. For example, in case of learning activities related to team work, assessment should be directed not only towards learning outcomes and products, but towards the study process as well. Therefore, it is important that assessment and feedback is given by the teacher not only at the end of semester, but also throughout the period, while the students are performing the tasks. Such attention to the student and his/her achievements increases student's motivation to study.

### **Online course “Intercultural Communication and Research” (IC&R): description of the pedagogical scenario**

Several online courses were developed and tested during the ARIADNE project (Content and Language Integrated Learning courses (CLIL), Foreign language courses (English/German for Specific Purposes), and the course of Intercultural Communication and Research (IC&R); however, only the shifts that have occurred during the IC&R course and the related research results are used in this article to present the research results. Online course of “Intercultural Communication and Research” (IC&R) consisted of 15 topics and assignments for students, each topic had discussion forums and all these activities had evaluation system, which helped assess students throughout the study process. The majority of the topics of the online IC&R course covered conventional aspects of intercultural competence (cultural dimensions, types of cultures, description of problems of intercultural communication, non-verbal communication, development of intercultural competence, etc.). The IC&R course was aimed at enhancing Master’s degree students’ intercultural research competences, conveying differences of research activity in various countries, creating equal conditions for the students to compete in the global research area; therefore, its online version also covered the topics aimed at developing good research paper, article writing skills, ability of taking critical approach towards scientific theories, understanding the importance of research ethics and presentation skills. All 15 assignments were subject to the deadline (one assignment in one week). Thus, the course was fairly intensive and long (15 weeks of intensive work). The assignments were creative, requiring the students to apply the theoretical material to explanation of their cultural context rather than reproduction of the knowledge they had acquired by reading, thus implying development and demonstration of interpretation skills. The IC&R course involved several assignments intended to present and reflect on the personal experience (filling in the research competence and experience portfolio, analysis of individual cases based on the presented literature, filling in own research CV, participation in forum discussions on each topic). Assignments and assessment instruments provided within this course matched each other (e.g. the portfolio was a learning instrument and a self-assessment instrument at the same time). The course was primarily intended for development of intercultural competence, but also aimed at development of other competences and characteristics, in particular, personal traits. One of the aims of the course (although not the major) was improvement of students’ skills in working in an online environment. One of the indirect aims of the course was development of personal traits, which is related to formation of positive online learning culture.

Various novel assessment strategies were chosen and applied to the IC&R course: self-assessment, group assessment, peer assessment, and portfolio, or competence portfolio. Different forms of assessment were used in development

of intercultural competence in MASTER project course “Intercultural communication for Research”: besides teacher assessment, respondents pointed out that self-, group-, peer-, portfolio assessment forms were frequent in the course. *Learning journals, diaries, reflective logs, e-portfolios* are some of the most important educational tools, which depend on the collection of the additional evidence. The students think over and collect the documentation of their intercultural experience, cultural difference, the peculiarities of the foreign and their own culture. If such documentation is filled in the other intercultural context (for example, if the student takes part in the exchange programme) and lives abroad, it allows him/her to remember and evaluate the experience (thoughts, feelings, etc.) after he/she is back home. This can be the basis for discussion with peer students. Diaries provide certain guidance for writing, and are not only the form of evaluation, but also the tool of the organization of the studies.

Portfolio allows documenting and fixating student’s intercultural experience during his/her stay in other country, performing self-assessment in different environment and presenting the evidence of the mastering of intercultural competence. Filling in the electronic and paper portfolio helps form students’ understanding of how they live and learn, how their communicational and organizational skills improve. The most important goal of the filling in the portfolio is to improve students’ learning process, creating the possibility for reflection on the learning process; develop the skills that grow as a result of the critical reflection.

### **The role of education tools for development of Master’s degree students’ self-regulatory learning skills**

In order to reveal development of self-regulatory skills during the IC&R course, the respective questions on personal traits and attitudes that cover critical thinking, self-regulation, creativity and sense of responsibility were included into the questionnaire. Factor analysis was performed both at the beginning and at the end of course; however, only the results of the factor analysis at the end of the semester were included in the table below (see Table 1), as the respondents have marked the section of Personal traits and attitudes as one of the main both at the beginning, and at the end of semester. This could have been determined by learning methods, new educational activities during the semester. For example, “Critical and adequate self-assessment” was related to performance of challenging assignments. At the beginning of semester, students, who previously had had no possibility to assess own foreign language, etc. skills, faced challenging assignments and had to reassess (probably, critically) their skills. Moreover, the IC&R course involved a lot of self-assessment assignments. Such assignments may have been related to critical self-assessment, better understanding of what should be improved and how. The “Intercultural

Communication and Research” course has revealed the importance of tolerance. Statements “responsibility” and “independence (independent implementation of assignments)” used in the questionnaire have reflected the traits developed by the online course, as the assignments and examinations were subject to deadline, which implied independent and responsible learning. The students were required to perform a lot of assignments – one assignment per week. In order to successfully implement the assignments, the students, first, had to become familiar with the material (read at least 10-15 pages of research articles, lecture transcripts, etc.), and then proceed to the assignment.

**Table 1. Results of the factor analysis at the end of semester**

<b>Factors and questionnaire statements</b>	<b>L</b>	<b>r/itt</b>	<b>α (cronbach)</b>
<b>1. Personal traits and attitudes</b>			0.90
Critical assessment of oneself, own competences	0.70	0.71	
Openness to novelty (novel learning methods, techniques, subjects)	0.66	0.71	
Critical and adequate self-assessment	0.61	0.66	
Independence (independent implementation of assignments)	0.76	0.72	
I am creative, original and innovative	0.58	0.66	
Understanding what should be improved and how	0.59	0.63	
Understanding what is core and subject-matter competence	0.51	0.61	
I am responsible for own actions (able to implement assignments in a timely and thorough manner)	0.52	0.57	
Ability to reflect on own research-related and professional progress	0.44	0.63	
Tolerance to otherness (other cultures, other practices)	0.47	0.59	

All students who took part in the research worked in the online Moodle environment and analysed articles from the list of references provided by the teachers and international databases. This factor has validated the fact that the notion of competences, contents, and understanding of the construct are related to work methods. The possibility for the students to study online has probably led to improvement of their self-regulatory learning skills and personal traits in consistent work, sense of responsibility, time management. Statements of the factor “Personal traits and attitudes” have received the best evaluations (M=4, maximum value M=5), compared to other competences developed under online courses designed during the project. On the other hand, these variables have been noticed to receive the best evaluations at the beginning of the project as well. Although the evaluation by the Master’s degree students was good, they still considered that their personal traits and attitudes should be improved further. Minor improvement in evaluation of self-regulatory learning skills and personal traits during the semester (in the course of learning under the

ARIADNE project) is explained by the fact that the shift of personal traits and attitudes requires more time than duration of one semester and more intensive experiential learning close to the demands of real-life social and occupational environment than provided by classroom or distance learning.

### Shift of self-regulatory learning skills and personal traits during the semester

Integration of educational activities into the process of Master's degree studies was aimed at fostering students' personal improvement, development of self-regulatory learning skills and personal traits. Although the main aim of Master's degree programmes is development of research competence, training of specialists for the labour market is inseparable from development of the respective personal traits. A good specialist who works in an international setting is required to possess the sense of responsibility, be thorough, capable of self-regulation, open to otherness and novelty, creative. Therefore, respective means of pedagogical influence were used by giving the students independent assignments that had to be performed by the students individually, in a responsible, creative, and timely manner. Statements providing evaluation of personal traits were also provided during the research. The research has revealed that evaluation of the self-regulatory learning skills and all personal traits improved at the end of semester (see Fig. 1).

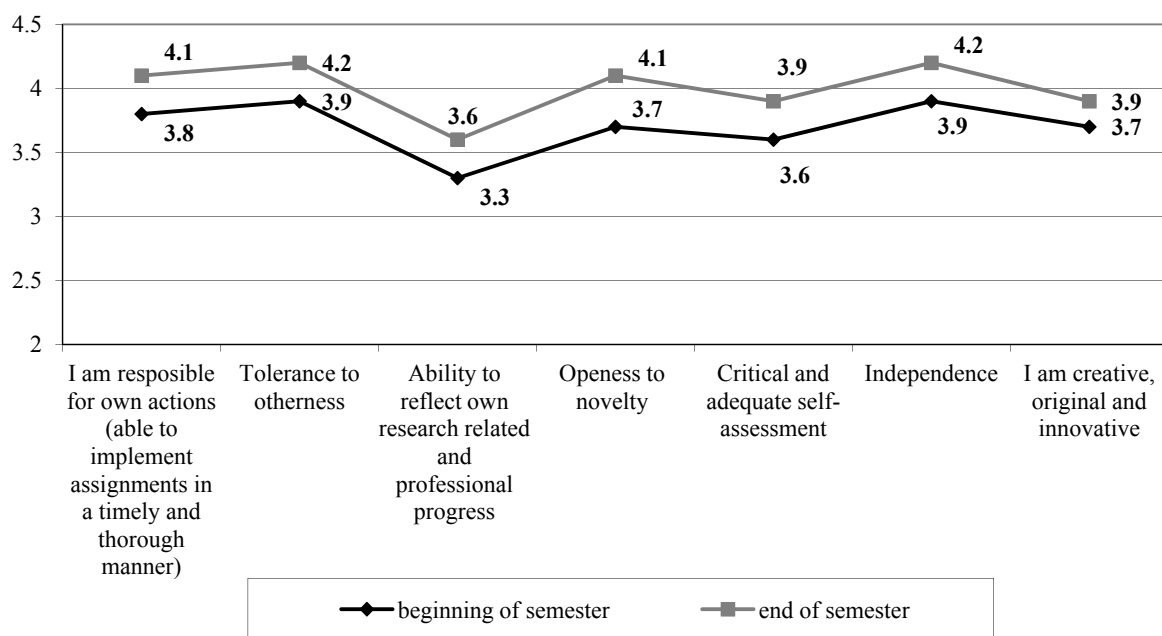


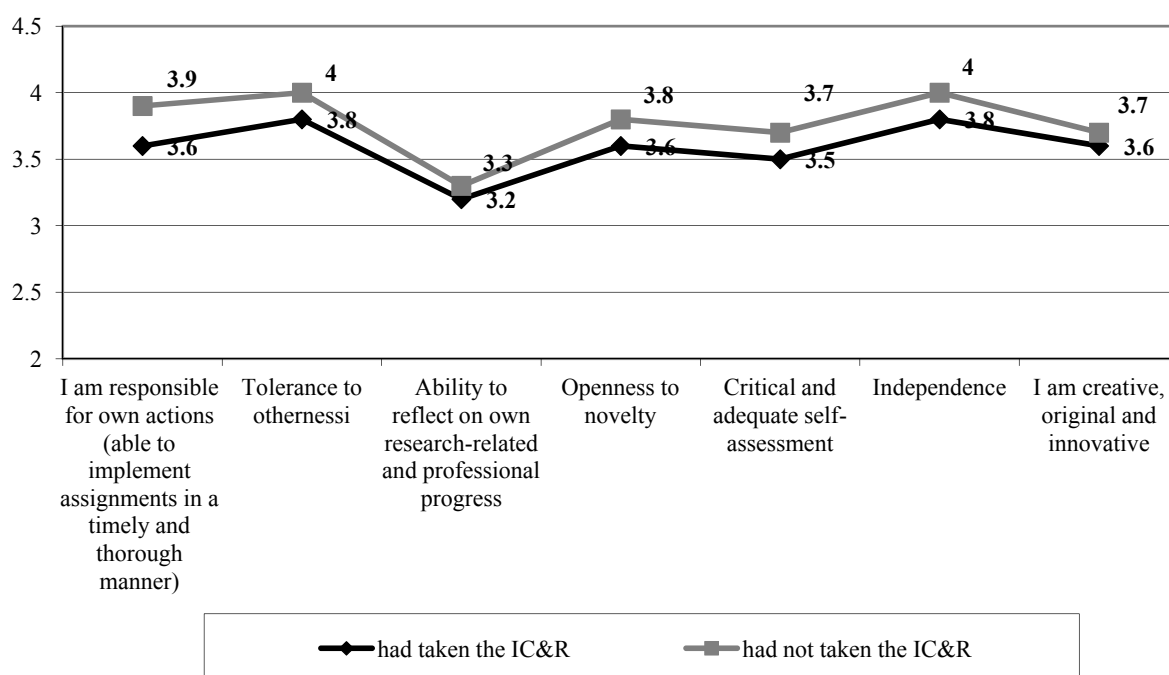
Figure 1. Shift of evaluation of self-regulatory learning skills during the semester

Personal traits are an important component of the competence of international research collaboration, and are closely linked to the intercultural competence. They reflect the students' attitude towards studies, their acceptance



of educational innovations, openness to other cultures. Personal traits also cover critical and adequate self-assessment, self-regulation, creativity, and originality.

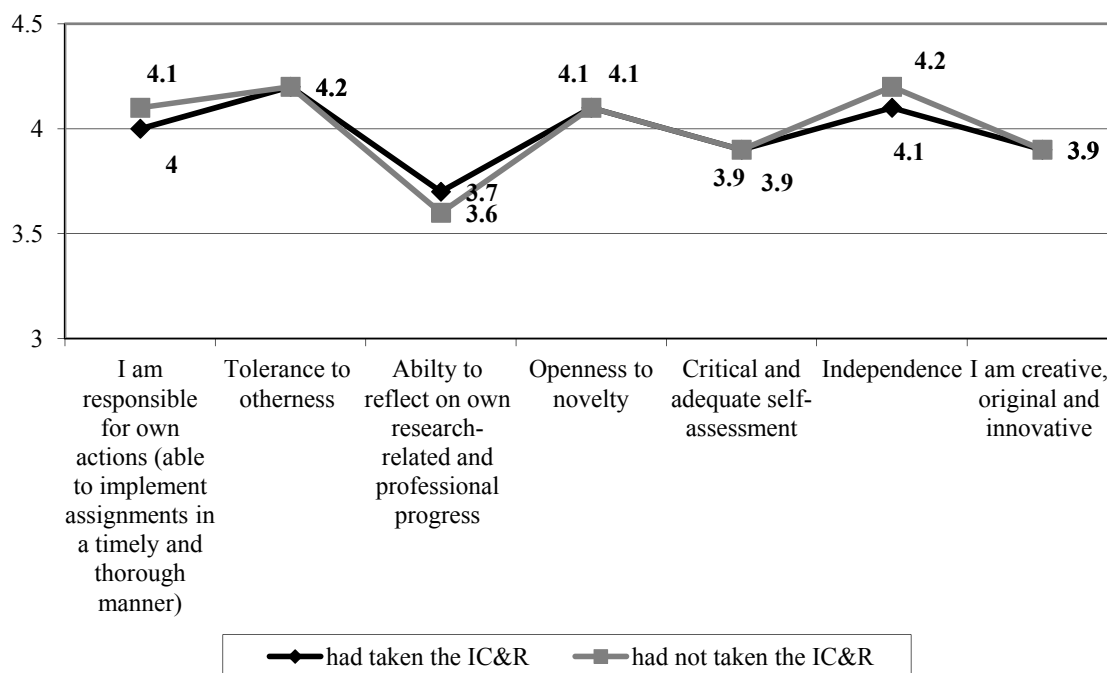
Spearman's correlation analysis on the association between theoretical scales of the competences in international research collaboration has shown strong correlation between the scale of self-regulatory learning/personal traits and the scale of intercultural competence ( $r = 0.623$ ,  $p = 0.000$ ). Statements "tolerance to otherness", "openness to novelty", "critical and adequate self-assessment" on the scale of personal traits reflect various aspects of intercultural competence: attitude towards novelty as a type of otherness; cultural and critical consciousness.



**Figure 2. Evaluation of self-regulatory learning skills at the beginning of semester**

Comparison of evaluations of self-regulatory learning skills and attitudes by the Master's degree students who had completed the IC&R course with the evaluations by those who had not taken this course yet demonstrated the following general tendency: Master's degree students who had not taken the IC&R course provided better evaluation of their personal traits at the beginning of semester than the students who had completed the IC&R course (see Fig. 2), while the differences between evaluation of personal traits and attitudes by the both groups became smaller at the end of semester (see Fig. 3). Students who had taken the IC&R course provided worse evaluations of their attitudes at the beginning of semester (the evaluation was held at the end of semester, as already mentioned), as a number of critical self-assessment assignments were given during the IC&R course (at the beginning, middle, and end of semester), giving better credit and assessment to those students whose self-assessment was

adequate and critical, compared to those whose self-assessment was inadequate and uncritical.



**Figure 3. Evaluation of self-regulatory learning skills at the end of semester**

On the other hand, having completed a number of critical self-assessment assignments and by learning to monitor own progress, students who had completed the IC&R course made bigger progress in development of their attitudes and personal traits, which has been supported by the significantly higher progress indicators (see Table 2). These results of evaluation of self-regulatory learning skills and attitudes reflect the controversy of the methodology applied to the research. Whether worse or better, self-assessment is not directly related to assessment of actual level of competences. However, the perception may be expanded by the education curriculum and methods: where the pedagogical influence is directed towards education of critical thinking, adequate and even worse self-assessment is a kind of educational goal. Worse evaluation of the initial level of personal traits and attitudes by the students of IC&R at the end of the course compared to the students who had not taken the course may be considered as a result of the entire pedagogical process during the course: educational methods were aimed at educating critical (possibly, worse) assessment of own competences in students (remember the well-known quote by Socrates: “I only know that I don’t know anything”). Application of students’ self-assessment instruments to assessment of progress in competence development faces the challenge of assessing real-life situation in cases, where students’ levels of self-criticism differ: students’ critical self-assessment educated purposefully during the research period influences insufficient self-assessment of competences by students, which means that **actual** (assessed not

subjectively, critically or uncritically) **level of competences and progress** remains unanalysed and unrevealed.

**Table 2. Progress indicators of assessment of self-regulatory learning skills by students who had taken and who had not taken the IC&R course**

Assessment statement	Assessment by students who have taken the IC&R course (M)			Assessment by students who have not taken the IC&R course (M)		
	Beginning of semester	End of semester	Progress indicator	Beginning of semester	End of semester	Progress indicator
I am responsible for own actions (able to implement assignments in a timely and thorough manner)	3.6	4.0	<b>0.4</b>	3.9	4.1	<b>0.2</b>
Tolerance to otherness	3.8	4.2	<b>0.4</b>	4.0	4.2	<b>0.2</b>
Ability to reflect on own research-related and professional progress	3.2	3.7	<b>0.5</b>	3.3	3.6	<b>0.3</b>
Openness to novelty	3.6	4.1	<b>0.5</b>	3.8	4.1	<b>0.3</b>
Critical and adequate self-assessment	3.5	3.9	<b>0.4</b>	3.7	3.9	<b>0.2</b>
Independence	3.8	4.1	<b>0.3</b>	4.0	4.2	<b>0.2</b>
I am creative, original and innovative	3.6	3.9	<b>0.3</b>	3.7	3.9	<b>0.2</b>

## Conclusions

As distance education continues to grow, it is important to design the online course the way that would lead to students' successful education. The research has shown that online learning and pedagogical instruments and scenarios promoting students' self-regulatory learning skills (ability to manage time, balance multiple tasks, set goals, and one's disposition regarding self-discipline, self-motivation, and personal responsibility). A more research-based approach to student assessment for online courses may improve the success of online courses for students, instructors, marketers, and academic institutions. With a greater understanding of how distance learners think and learn, and how personality corresponds to academic success online, educators may be able to design better-fitting online courses and better advise the students on the courses to take.

The research has demonstrated that the students who have completed the IC&R course, implemented a number of critical self-assessment tasks and have

been learning to monitor own progress, have made greater progress and achieved bigger shift in self-regulatory learning skills and attitudes. These results of assessment of personal traits and attitudes reflect the controversy of the applied methodology. Whether worse or better, self-assessment is not directly related to assessment of the actual level of competences. However, the perception may be expanded by the educational curriculum and methods: where the pedagogical influence is directed towards education of critical thinking, more adequate and even worse self-assessment is a kind of educational goal. Worse evaluation of the initial level of personal traits and attitudes by the students of IC&R at the end of the course compared to the students who had not taken the course may be considered as a result of the entire pedagogical process during the course: educational methods were aimed at educating critical (possibly, worse) assessment of own competences in students.

During the research, students were found to consider that their self-regulatory learning skills and attitudes still needed to be improved; and only minor improvement in assessment of personal traits during the semester (during the IC&R course) was determined by comparison of the research results at the beginning and end of semester. This is explained by the fact that the shift of personal traits and attitudes requires more time than duration of one semester and more intensive experiential learning close to the demands of real-life social and occupational environment than provided by classroom or distance learning.

### References

- Beldarrain, Y. (2006). Distance education trends: integrating new technologies to foster student interaction and collaboration. *Distance Education*, 27(2), 139e153. doi:10.1080/01587910600789498
- Bromme, R., Hesse, F. W., Spada, H. (Eds.) (2005). *Barriers and Biases in Computer-Mediated knowledge communication and how they may be overcome* (5 ed.). New York: Springer.
- Bryant, S., Khale, J., Schafer, B. (2005). Distance Education: A Review of the Contemporary Literature. *Issues in Accounting Education*, 20 (3), 255–272.
- Holcomb, L. B., King, F. B., & Brown, S. W. (2004). Student Traits and Attributes Contributing to Success in Online Courses: Evaluation of university online courses. *Journal of Interactive Online Learning*, 2(3). <http://www.ncolr.org/jiol/issues/PDF/2.3.4.pdf>
- Jarvela, S., & Jarvenoja, H. (2011). Socially constructed self-regulated learning and motivation regulation in collaborative learning groups. *Teachers College Record*, 113(2), 350-374.
- Jonassen, D. H., Kwon, H. (2001). Communication patterns in computer mediated versus face-to-face group problem solving. *Educational Technology Research and Development*, Vol.49 (1), 35–51.
- Kerr, M. S., Rynearson, K., & Kerr, M. C. (2006). Student characteristics for online learning success. *Internet and Higher Education*, 9(2), 91-105.
- Schellens, T., Valeke, M. (2005). Collaborative learning in asynchronous discussion groups: What about the impact on cognitive processing? *Computers in Human Behavior*, 21 (6), 957–975.

- Schwartz, D., Blair, K.P., Biswas, G. & Leelawong, K.(2007). Animations of Thought: Interactivity in the Teachable Agent Paradigm. In R. Lowe and W. Schnotz (Eds.), *Learning with Animation: Research and Implications for Design* (pp. 114-140). UK: Cambridge University Press.
- Sherry, L. (1996). Issues in distance learning. [Electronic Version] *International Journal of Education Telecommunication*, 1(4), 337-365. Retrieved February 1, 2015 from <http://www.cudenver.edu/~lsherry/pubs/issues.html>
- Timmons, R. J. (2004). Working adults and online instruction. In D. Christopher (Ed.), *E-World: Virtual Learning, Collaborative Environments, and Future Technologies* (pp. 89-99). Reston, VA.: National Business Education Association.
- Vrasidas, C., Zembylas, M. (2003). The Nature of Technology-mediated Interaction in Globalised Distance Education. *International Journal of Training and Development*, 7(4), 271–286.
- Wang, A. Y., & Newlin, M. H. (2000). Characteristics of students who enroll and succeed in psychology web-based courses. *Journal of Educational Psychology*, 92, 137–143.
- Zimmerman, B. (2008). Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. *American Educational Research Journal*, 45(1), pp. 166-183.
- Zimmerman, B.J. (2001). Theories of self-regulated learning and academic achievement: An overview and analysis. In B. Zimmerman & D. Schunk (Eds.), *Self-regulated learning and academic achievement: Theoretical perspectives* (pp. 1–37). Mahwah, NJ: Erlbaum.
- Zumbrunn, S., Tadlock, J., & Roberts, E. D. (2011). Encouraging Self-Regulated Learning in the Classroom: A Review of the Literature. MERC.